IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent Application

Appellants: Jeroen Siebrand Wellen
Serial No.: 10/808,683 **Group Art Unit:** 2613
Filed: 03/25/2004 **Examiner:** Kim, David S.
Title: METHOD, APPARATUS AND SYSTEM FOR THE COMMUNICATION OF SERVICES IN AN OPTICAL ACCESS NETWORK
Attorney Docket No.: Wellen 6 (ALU/126313)
Confirmation #: 6204

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APPEAL BRIEF

Appellants submit this appeal brief to the Board of Patent Appeals and Interferences on appeal from the decision of the Examiner of Group Art Unit 2613 mailed December 10, 2008 finally rejecting claims 1, 3, 4, 6-9, 11 and 13-20.

In the event that an extension of time is required for this appeal brief to be considered timely, and a petition therefor does not otherwise accompany this appeal brief, any necessary extension of time is hereby petitioned for.

Appellants believe the only fee due is the **$540** Appeal Brief fee which is being charged to counsel's credit card. In the event Appellants are incorrect, the Commissioner is authorized to charge any other fees to Deposit Account No. 50-4802/**ALU/126313**.

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REAL PARTY IN INTEREST

The real party in interest is ALCATEL-LUCENT, INC. The assignee of record is LUCENT TECHNOLOGIES INC, which merged with ALCATEL INC. to form ALCATEL-LUCENT, INC.

RELATED APPEALS AND INTERFERENCES

Appellants assert that no appeals or interferences are known to Appellants, Appellants' legal representative, or assignee which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

STATUS OF CLAIMS

Claims 1, 3, 4, 6-9, 11 and 13-20 are pending in the application. Claims 1-20 were originally presented in the application. Claims 1, 3, 6-9, 11, 13 and 16-20 have been amended. Claims 2, 5, 10 and 12 have been canceled. The final rejection of claims 1, 3, 4, 6-9, 11 and 13-20 is appealed.

STATUS OF AMENDMENTS

All claim amendments have been entered.

SUMMARY OF CLAIMED SUBJECT MATTER

Embodiments of the present invention include a method, apparatuses and system for communicating services to and from customer premises in an access network including a passive optical path and an active optical path. Deficiencies of the prior art are addressed by transmitting services from a central office intended for customer premises using a passive optical downstream link and receiving services at the central office from the customer premises using an active optical upstream link. The passive optical path includes at least a passive means for splitting a downstream optical signal intended for the customer premises. The active optical path includes at least one receiver for receiving services from the customer premises intended for upstream transmission, at least one switch for aggregation or concentration of the upstream traffic from different customer premises and multiplexing these onto a single upstream link, and at least one transmitter for transmitting the switched services upstream.

For the convenience of the Board of Patent Appeals and Interferences, Appellants' independent claims 1, 8, 16 and 18 are presented below with citations to various figures and appropriate citations to at least one portion of the Specification for elements of the appealed claims.

Claim 1 positively recites (with reference numerals, where applicable, and cites to at least one portion of the Specification added):

> 1. In an optical access network (100), a method for the communication of services between a central office (110) and customer premises (130_N), comprising:
>
> transmitting services from said central office (110) to said customer premises (130_N) through a passive all-optical downstream path (path including element 140 between central office 110 and customer premises 130_N) having a first termination at said central office (110) and a second termination at said customer premises (130_N); (Specification p. 4 lines 14-15 and 21-24 and p. 5 lines 4-10) and

receiving services from said customer premises (130_N) at said central office (110) from an active optical upstream path (path including elements 122, 124_N and 126 between customer premises 130_N and central office 110) having a first termination at said customer premises (130_N) and a second termination at said central office (110). (Specification p. 4 lines 15-17 and p. 4 line 25 – p. 5 line 3)

Claim 8 positively recites (with reference numerals, where applicable, and cites to at least one portion of the Specification added):

8. An apparatus (120) for the communication of services between a central office (110) and customer premises (130_N) in an optical access network (100), comprising:

a splitter (140) disposed in a passive all-optical downstream path (path including element 140 between central office 110 and customer premises 130_N), for splitting downstream services transmitted from said central office (110) through said passive all-optical downstream path; (Specification p. 5 lines 4-10)

at least one receiver (124_N) disposed in an active optical upstream path (path including elements 122, 124_N and 126 between customer premises 130_N and central office 110), for receiving services from said customer premises (130_N) from said active optical upstream path; (Specification p. 4 line 28 – p. 5 line 3) and

at least one switch (122) disposed in said active optical upstream path for aggregating and multiplexing upstream traffic; (Specification p. 2 line 31 – p. 3 line 1)

wherein said passive all-optical downstream path (path including element 140 between central office 110 and customer premises 130_N) has a first termination at said central office (110) and a second termination at said customer premises (130_N); (Specification p. 4 lines 14-15 and 21-24 and p. 5 lines 4-10)

wherein said active optical upstream path (path including elements 122, 124_N and 126 between customer premises 130_N and central office 110) has a first termination at said customer premises (130_N) and a second termination at said central office (110). (Specification p. 4 lines 15-17 and p. 4 line 25 – p. 5 line 3)

Claim 16 positively recites (with reference numerals, where applicable, and cites to at least one portion of the Specification added):

16. An apparatus (120) for the communication of services between a central office (110) and customer premises (130_N) in an optical access network (100), comprising:

a means for splitting downstream services transmitted from said central office through a passive all-optical downstream path (140); (Specification p. 5 lines 4-10)

at least one means for receiving services from said customer premises from an active optical upstream path (114_N); (Specification p. 5 lines 2-3) and

at least one means for aggregating and multiplexing upstream traffic in said active optical upstream path (120, 122, 124_N, 126); (Specification p. 4 line 25 – p. 5 line 2)

wherein said passive all-optical downstream path (path including element 140 between central office 110 and customer premises 130_N) has a first termination at said central office (110) and a second termination at said customer premises (130_N); (Specification p. 4 lines 14-15 and 21-24 and p. 5 lines 4-10)

wherein said active optical upstream path (path including elements 122, 124_N and 126 between customer premises 130_N and central office 110) has a first termination at said customer premises (130_N) and a second termination at said central office (110). (Specification p. 4 lines 15-17 and p. 4 line 25 – p. 5 line 3)

Claim 18 positively recites (with reference numerals, where applicable, and cites to at least one portion of the Specification added):

18. A passive/active optical access network (100) for the communication of services between a central office (110) and customer premises (130_N), comprising:

a central office (110); (Specification p. 4 lines 2-5)

at least one customer premise (130_N); (Specification p. 4 lines 2-5) and

an active/passive access unit (120) for providing communication between said central office (110) and said at least one customer premise (130_N), (Specification p. 4 lines 2-5) wherein said passive/active access network (100) is adapted to:

transmit services from said central office (110) to said customer premises (130_N) through a–passive all-optical downstream path (path including element 140 between central office 110 and customer premises 130_N), wherein said passive all-optical downstream path has a first termination at said central office (110) and a second termination at said customer premises (130_N); (Specification p. 5 lines 4-10) and

receive services from said customer premises (130_N) at said central office (110) from said active optical upstream path (path including elements 122, 124_N and 126 between customer premises 130_N and central office 110), wherein said active optical upstream path has a first termination at said customer premises (130_N) and a second termination at said central office (110). (Specification p. 4 line 28 – p. 5 line 3)

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1, 3, 4, 6-9, 11 and 13-20 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Combs, et al. (U.S. Patent No. 6,751,417, issued on June 15, 2004, hereinafter "Combs") in view of Cook, et al. ("Optical Fiber Access – Perspectives Toward the 21st Century" IEEE Communications Magazine, February 1994, hereinafter "Cook").

ARGUMENTS

Rejection Under 35 U.S.C. § 103

Claims 1, 3, 4, 6-9, 11 and 13-20 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Combs, et al. (U.S. Patent No. 6,751,417, issued on June 15, 2004, hereinafter "Combs") in view of Cook, et al. ("Optical Fiber Access – Perspectives Toward the 21st Century" IEEE Communications Magazine, February 1994, hereinafter "Cook"). Appellants respectfully traverse the rejection.

Applicable Law

The Examiner bears the initial burden of establishing a prima facie case of obviousness. See MPEP § 2141. Establishing a prima facie case of obviousness begins with first resolving the factual inquiries of *Graham v. John Deere Co.*, 383 U.S. 1 (1966). The factual inquiries are as follows:

(A) determining the scope and content of the prior art;
(B) ascertaining the differences between the claimed invention and the prior art;
(C) resolving the level of ordinary skill in the art; and
(D) considering any objective indicia of nonobviousness.

Once the *Graham* factual inquiries are resolved, the Examiner must determine whether the claimed invention would have been obvious to one of ordinary skill in the art. The key to supporting a rejection under 35 U.S.C. §103 is the clear articulation of the reasons why the claimed invention would have been obvious. The analysis supporting such a rejection must be explicit. "[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *In re Kahn*, 441 F. 3d 977, 988 (Fed.Cir. 2006), *cited with approval by KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 126 S. Ct. 2965 (2006); *see also* MPEP §2141.

The References

Combs discloses an architecture for a communication system between an head-end and end-users that includes one or more mux-nodes for receiving optical communication signals from the head-end and forwarding the received communication signals to one or more mini-fiber nodes (mFNs) which provide full duplex communication to end-users. The mux-node may be connected to one or more mFNs via one or more optical fibers and each of the mFNs may be connected to one or more end users via passive wired connections such as coaxial lines. (See Combs col. 1 lines 40-65). Thus, each of the mFNs receives analog and digital optical signals, modulates these signals onto appropriate RF bands and transmits the signals to the end-users via passive wired connections. (See Combs col. 3 lines 17-21). Upstream RF signals are received from the end-users by the mFNs via the wired connections and are transmitted to the mux-node by using multiple optical fibers or wavelength division multiplexing (WDM). (See Combs col. 3 lines 21-32).

Cook is an article published February 1994 discussing emerging fiber systems that were expected to provide the basis for large scale deployment of fiber to business and residential customers during the 1990s and beyond. (See Cook, p. 78, Subtitle). Among other things, Cook describes Active Double Star (ADS) and Passive Optical Network (PON) network topologies. (See Cook, p. 79, 5th full paragraph). Particular examples are given of an ADS based fiber-to-the-curb (FTTC) system and a PON fiber-to-the-building (FTTB) system. (See Cook, Figs. 5 and 6). Cook further describes the popularity of different approaches in different regions. (See Cook p. 80-82).

Claims 1, 3, 4, 6-9, 11 and 13-20

With respect to independent 1 (which is also representative of independent claims 8, 16 and 18) the final Office Action fails to establish a *prima facie* case of obviousness, because the combination of Combs and Cook fails to teach or suggest all the claim limitations. Specifically, the combination of Combs and Cook fails to teach or suggest transmitting services from a central office to a customer premises through a passive all-optical downstream path *and* receiving services from the customer premises at the central

office from an active optical upstream path, as taught and claimed by Appellants' independent claim 1.

In particular, Appellants' claim 1 recites:

> 1. In an optical access network, a method for the communication of services between a central office and customer premises, comprising:
>
> transmitting services from said central office to said customer premises through a passive all-optical downstream path having a first termination at said central office and a second termination at said customer premises; and
>
> receiving services from said customer premises at said central office from an active optical upstream path having a first termination at said customer premises and a second termination at said central office. (Emphasis added)

Moreover, independent claims 8, 16 and 18 contain limitations substantially similar to the highlighted features of claim 1.

In various embodiments, Appellants teach a method, apparatus and system for the communication of services to and from customer premises in an optical access network where services intended for the customer premises are transmitted using a passive optical downstream link and services from the customer premises are received using an active optical upstream link. (See, e.g., Specification p. 2 lines 20-24). More specifically, for upstream communication from a customer premises to a central office, only active components (for example, a switch, a plurality of receivers and a transmitter) are implemented. (See, e.g., Specification p. 4 lines 25-28). In contrast, for downstream communication in the Passive/Active Optical Network, only passive components (for example, a power splitter/combiner) are used. As such, a Passive/Active Optical Network in accordance with the claimed embodiments provides superior broadcast and multicast capabilities using inexpensive and readily available components and an uncomplicated central office. (See, e.g., Specification p. 5 lines 4-13).

The alleged combination of Combs and Cook (as taught by Combs) fails to teach or to suggest transmitting services from a central office to a customer premises through a passive all-optical downstream path *and* receiving services from the customer premises at the central office from an active optical upstream path, as positively recited in Appellants' independent claim 1. In particular, Combs does not teach or suggest "a

passive all-optical downstream path." Rather, Combs only teaches a single path active network, where all traffic between Head-End 102 and End-Users 112 must pass through active components in both directions (the Mini-Fiber Node 108 is at least one active component). Therefore, Combs also cannot teach or suggest transmitting services from a central office to a customer premises through a passive all-optical downstream path *and* receiving services from the customer premises at the central office from an active optical upstream path.

Cook does not bridge the substantial gap left by Combs because Cook also fails to teach or to suggest transmitting services from a central office to a customer premises through a passive all-optical downstream path *and* receiving services from the customer premises at the central office from an active optical upstream path, as positively recited in Appellants' independent claim 1. Notably, Cook only discloses Active Double Star (ADS) and Passive Optical Network (PON) network topologies. (See Cook, p. 79, 5th full paragraph). However, Appellants themselves have disclosed that Active Optical Networks and Passive Optical Networks were already known in the art. (See Specification p. 1 line 10 – p. 2 line 16). What Cook completely fails to discuss or even suggest is the novel dual arrangement of a passive all-optical downstream path for communications from a central office to a customer premises *and* an active optical upstream path for communications from the customer premises to the central office.

For at least the above reasons, Combs and Cook, alone or in any permissible combination fail to teach or to suggest transmitting services from a central office to a customer premises through a passive all-optical downstream path *and* receiving services from the customer premises at the central office from an active optical upstream path, as positively recited in Appellants' independent claim 1. As such, the alleged combination of Combs and Cook fails to teach or to suggest all elements of Appellants' claim 1 as required to support a rejection under 35 U.S.C. §103(a). Moreover, independent claims 8, 16 and 18 recite substantially similar limitations to those discussed with respect to claim 1. Thus, for at least the same reasons as stated above with respect to independent claim 1 being patentable over the alleged combination of Combs and Cook, claims 8, 16 and 18 are also patentable over the references. In addition, claims 3, 4, 6-7, 9, 11, 13-15, 17, and 19-20 depend from independent claims 1, 8, 16 and 18 respectively and recite

additional limitations. As such, and for at least the same reasons as stated above with respect to the independent claims being patentable over the alleged combination of Combs and Cook, these dependent claims are also patentable over the references. As such, Appellants respectfully request that the rejection be withdrawn.

Appellants reserve the right to establish the patentability of each claim individually in subsequent prosecution.

Response to Examiner's Arguments

1. With respect to Appellants' claim 1, the final Office Action argues as follows:

> **Regarding claim 1**, Combs discloses:
> In an optical access network, a method for the communication of services between a central office and customer premises (end-users 112 in Fig. 1), comprising:
> transmitting (arrows pointing to the right in Figs. 3-4) services from said central office (head-end 102 in Fig. 1) to said customer premises through a passive all-optical downstream path (e.g., paths associated with optical splitters 316 in Fig. 3 and 304 in Fig. 4 are all-optical from head-end 102 to a mini-fiber node 108) having a first termination at said central office (e.g., termination of 114 at head-end 102 in Fig. 1); and
> receiving (arrows pointing to the left in Figs. 3-4) services from said customer premises at said central office from an active optical path (e.g., upstream links in Figs. 3-4) having a first termination (e.g., termination at end-users 112 in Fig. 1) at said customer premises and a second termination at said central office (e.g., termination of 11 4 at head-end 102 in Fig. 1).
>
> Combs does not expressly disclose:
> said ***passive*** all-optical downstream path having a ***second termination at said customer premises***.
>
> Rather, Combs teaches a distribution configuration to customer premises where the passive optical downstream path has a second termination at an intermediate distribution site before the customer premises (mini-fiber nodes 108 in Fig. 1). Notice that this distribution configuration to customer premises is also known as a fiber/coax hybrid network, as noted in Cook (p. 83-84 , "Fiber/Coax Systems"), since it employs fiber and coaxial lines in a hybrid network (Combs, fibers 114, 120, 122 and coaxial lines in col. 3, l. 42-43). However, other alternative distribution configurations to customer premises are known in the field of art, such as "fiber-to-the-building" (Cook, FTTB in Fig. 6) and "fiber-to-

> the-home" (FTTH) (Cook, "Fiber-to-the-Home" on p. 84 , col. 2., last paragraph - p. 85, col. 1). FTTB and FTTH both employ a passive optical downstream path with a second termination at customer premises (Cook, fiber to Customer's premises in Fig. 6, "fiber-to-the-home" implies termination at the "home/customer premises). As they both present suitable alternatives to a fiber/coax hybrid network, it follows that they constitute obvious variations. Moreover, movement toward digital baseband solutions is likely to encourage the adoption of an all fiber approach, such as FTTH, for fully adequate upstream capability for the long term (Cook. p. 86. col. 1, 1st two full paragraphs).

(See final Office Action, p. 2-3). In essence, the final Office Action alleges that paths associated with Combs's optical splitters 316 in Fig. 3 and 304 in Fig. 4 disclose passive optical downstream communications. Appellants respectfully disagree.

In particular, Combs completely fails to teach or suggest "a passive all-optical downstream path." Appellants respectfully reiterate that Combs only teaches a single path active network, where all traffic between Head-End 102 and End-Users 112 must pass through active components in both directions (the Mini-Fiber Node 108 is at least one active component). Accordingly, Appellants respectfully submit that it is improper to infer that Combs teaches a passive downstream path by selectively describing only the passive components that are clearly part of an active downstream pathway.

2. Notwithstanding, in the final Office Action's *Response to Arguments* section it is further alleged that:

> the standing rejection relies on the *combination* of teachings from Combs and Cook. In view of Cook, the downstream paths associated with optical splitters 316 in Fig. 3 and 304 in Fig. 4 of Combs are passive all-optical from head-end 102 in Fig. 1 of Combs to the Customer's premises in Fig. 6 of Cook or to the "home"/customer premises of "fiber-to-the-home" of Cook.

(See final Office Action p. 7-8, *Response to Arguments*, "the first point"). However, under 35 U.S.C. §103, "a prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention." (See MPEP 2141.02 (VI), quoting *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220

USPQ 303 (Fed.Cir. 1983), *cert. denied*, 469 U.S. 851 (1984)). It should be noted that any active optical communication path will include passive components. However, viewing such components separately does not properly show a passive communication path. Combs as a whole clearly teaches an active downstream path. Thus, the Examiner's selection of components from Combs is inconsistent with Combs's teaching of an active downstream path. Such an interpretation is contrary to the "as a whole" examination requirement and the express teachings of the reference itself. This is true, even if Combs is to be combined with the disclosure of Cook.

3. The final Office Action also alleges:

> ...the standing rejection recognizes that the passive all-optical downstream path, i.e., the physical all-optical path, of Combs ends at an intermediate distribution site (mini-fiber nodes 108 in Fig. 1). Such an end of the passive all-optical downstream path, i.e., the physical all-optical path, of Combs properly constitutes a "termination", as claimed. Accordingly, Applicant's statement that "An "intermediate" distribution cannot also be a "termination" is not persuasive.

(See final Office Action p. 8-9 *Response to Arguments*, "the third point"). Appellants respectfully disagree that an intermediate distribution site in Combs may qualify as a "termination at [a] customer premises," as presented in Appellants' claims. Combs clearly shows a customer premises (i.e, End-user 112 in Fig. 1) that is not the Mini-Fiber Node 108. Thus, the Mini-Fiber Node 108 is an intermediate component and is simply not a termination point according to Combs itself. (See Combs, Fig. 1). The final Office Action dismisses this portion of Combs' system as irrelevant in creating a combined structure from parts of Combs and Cook that allegedly renders Appellants' claims obvious. However, such interpretation is contrary to the express teachings of the reference.

In particular, Appellants' claim 1 specifically notes a service start point (central office) having a first termination and a service end point (customer premises) having a second termination where an all-passive downstream path delivers services therebetween.

The claim language is straightforward and should not be imbued by the Examiner with an overly broad meaning that is also inconsistent with the Specification itself.

The Examiner argues that "termination" does not imply or suggest "service termination point." (See final Office Action p. 8-9). This is contextually incorrect. "Termination," along with the location of the termination points (central office and customer premises), within the context of a method for communicating services between a central office and customer premises very clearly denotes service termination. This is critical to understanding the appropriate application of the prior art.

In addition, Appellants refer to the following definition provided in Federal Standards FED-STD-1037C 1996: Glossary of Telecommunications Terms—"service termination point: The last point of service rendered by a commercial carrier under applicable tariffs. Note 1: The service termination point is usually on the customer premises. Note 2: The customer is responsible for equipment and operation from the service termination point to user end instruments. Note 3: The service termination point usually corresponds to the demarcation point." (available online at http://www.its.bldrdoc.gov/fs-1037/dir-033/_4803.htm, provided by Institute for Telecommunications Sciences, U.S. Department of Commerce, National Telecommunications and Information Administration) (see also, ATIS Telecom Glossary 2007, available online at http://www.atis.org/glossary/). In view of the foregoing, the intermediate distribution sites (the mini-fiber nodes) of Combs are not termination points as taught and claimed by Appellants. Appellants note that their arguments do not solely rely upon definitions or standards; rather, the foregoing is provided for illustrative purposes.

4. Appellants further note that the final Office Action fails to demonstrate which portions of the references would make it obvious to select the combination of individual components from each of Combs and Cook in the manner asserted so as to arrive at Appellants claims. *See, e.g., KSR Int'l Co. v. Teleflex Inc.* 550 U.S. 398 (2007) ("a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art...it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to

combine the elements in the way the claimed new invention does"). The Office Action does allege that Cook suggests "movement towards digital baseband solutions is likely to encourage the adoption of an all fiber approach." (See final Office Action, p. 2-3). However, Appellants respectfully submit that this disclosure is insufficient to provide the motivation to make all the necessary modifications to Combs and incorporate the portions of Cook as selected.

For example, the mere knowledge of FTTH (fiber-to-the-home) and FTTB (fiber-to-the-building) does not suggest one way or the other whether downstream communication is passive or active since FTTH and FTTB are equally suitable for both passive and active network configurations. At best, the teachings of Cook would suggest upgrading Combs to implement the FTTH by extending the fiber in the Combs' Fig. 1 from the Mini-Fiber Node 108 to the End-user 112 and would merely create a FTTH active optical access network which was already known in the art. Nothing in either Combs or Cook suggests modifying Combs to implement the Appellant's specific dual system which transmits services from a central office to a customer premises through a passive all-optical downstream path *and* receives services from the customer premises at the central office from an active optical upstream path.

5. The final Office Action claims that Cook "provides a practical instruction on how to implement the alternative configuration, i.e. remove active electronics" as to how to modify Combs as alleged. (See final Office Action. p. 13). Appellants respectfully disagree and submit that the only instructions for how one could theoretically combine Combs and Cook to arrive at Appellants' claims are found in Appellants' own disclosure, and that the Office Action's alleged combination is based on impermissible hindsight.

In fact, Combs would need to be substantially modified in a way that is not taught or disclosed by Combs, Cook or a combination of the two in order to achieve the embodiment of Appellants' claim 1. At least the following modifications would be required: the Mux-Node 104 of Combs' Fig. 1 would need to be substituted by the A/P Access Unit 120 (Fig. 1) or 220 (Fig. 2) in Appellants' system, the Mini-Fiber Node 108 removed, and each End-user 112 connected to the A/P Access Unit via separate fiber optic cables. In effect, one would need to completely redesign Combs to even create a

working passive optical network that is known in the art. In such circumstances, requiring a total overhaul of the references' teachings, courts have held that the claims are non-obvious. *See In Re Ratti*, 270 F.2d 810, 123 USPQ 349 (C.C.P.A. 1959) ("the combination of [references] is not a proper ground for rejection ...This suggested combination of references would require a substantial reconstruction and redesign of the elements...as well as a change in the basic principles under which the [primary reference] was designed to operate.")

Alternatively, considering Combs' Mini-Fiber Node 108 Fig. 1 as the "second termination" as suggested by the final Office Action (p. 2 lines 1-3) would result in a non-functional passive optical network. The network would be non-functional because (1) one would need to substitute an End-User 112 for the Mini-Fiber Node 108 (2) the End-user would require the additional capabilities of receiving and transmitting optical data, and (3) there would be upstream data collision at the Mux-Node 104 without implementation of a time division multiplexing or similar shared access protocol. This would require an additional controller and appropriate software/hardware at the Mini-Fiber Node 108 and Head-end 102 (see Cook p. 79-80 "a multiple access protocol must be implemented to ensure that the returning bit stream from each customer is appropriately synchronized at the exchange."). In similar circumstances wherein the proposed combination of references would result in an inoperable device, courts have held that the references cannot support an examiner's prima facie case for obviousness. *See McGinley v. Franklin Sports Inc.*, 262 F.3d 1339, 60 USPQ2d 1010 (Fed.Cir. 2001) ("If references taken in combination would produce a 'seemingly inoperative device,' we have held that such references teach away from the combination and thus cannot serve as predicates for a prima facie case of obviousness.")

6. In addition, Cook explicitly teaches away from both Combs and Appellants' system/method. As stated in Appellants' Specification, passive optical networks were designed to overcome perceived limitations with active optical networks. (See Specification p. 2 lines 7-16). The Cook reference, acknowledging efforts to advance both active ("active double star" or ADS) and passive optical network (PON) approaches comes out in clear favor of PONs: "In Europe the drive has centered more on the

deployment of fiber systems directly to buildings—thus avoiding the need for active nodes in the network... BT [British Telecom] studies have shown that the PON approach has greater benefits in minimizing the proportion of the per line cost incurred in deploying equipment at the exchange and in the fiber infrastructure down to the customer...The synergy between PON systems and SDH [synchronous digital hierarchy] is expected to grow" (Cook p. 80-81 (both authors are associated with British Telecom Labs)).

Cook is also critical of both Combs' and Appellants' approaches, stating "The drive [in the U.S.] has been to develop FTTC systems (ADS and PON) for general deployment in residential areas. Given the relatively low density of U.S. housing developments, this ideally requires very small active nodes to be deployed at the curb serving only 4 living units (LUs). The problems of engineering, installing powering and maintaining such large numbers of small nodes, and at the same time achieving acceptable whole life costs, are particularly difficult" (Cook p. 80). Combs' system requires an "active node" (the Mini-Fiber Node 108) with active components, deployed in the field to service a small handful of End-users 112. Appellants' system, while vastly different than Combs', also requires a locally deployed node with active components (the A/P Access Unit 120 in Fig. 1 or 220 in Fig. 2 for upstream data transmission) even with fiber extending to the customer premises. Again, "a prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention." (See MPEP 2141.02 (VI)). This applies to both Combs and to Cook; in particular, the portions of Cook that are critical of active communication paths. Accordingly, Appellants submit that the proposed combination of Combs and Cook is not obvious under 35 U.S.C. 103(a) as Cook teaches away from Appellants' system/method.

7. In addition to the foregoing, Appellants respectfully contend that the final Office Action erroneously reduces Appellants' invention down to a gist or thrust that disregards the requirement of considering the subject matter as a whole. Specifically, the final Office Action states: "The main difference between Combs and Applicant's claimed invention is not the use of whether or not active and/or passive elements are employed, or even whether or not 'Cook teaches away from Applicant's system/method'. Rather, the

main difference is the issue of the 'distribution configuration to the customer premises', as noted in the treatment of claim 1." (See Office Action p. 15) (emphasis added). However, in addition to the requirement that "a prior art reference must be considered in its entirety, i.e., as a whole" (MPEP 2141.02 (VI)), the claimed invention (i.e. Applicants' claimed invention) must also be considered as a whole. (See MPEP 2141.02 (I): "In determining the difference between the prior art and the claims, the question under 35 U.S.C. 103 is not whether the difference themselves would have been obvious, but whether the claimed invention as a whole would have been obvious."). "Distilling an invention down to the 'gist' or 'thrust' of an invention disregards the requirement of analyzing the subject matter 'as a whole.'" (See MPEP 2141.02 (II)).

The "transmitting" (downstream) and "receiving" (upstream) clauses in Applicants claim 1, for example, cannot be analyzed completely separate but must be considered as a whole. In focusing on the "main difference" Applicants submit that the portions of the references teaching away from Applicants' claims, in particular, the active upstream portions, are inappropriately ignored.

8. Appellants further note that various points discussed above were raised in Appellants' response to the final Office Action submitted pursuant to 37 C.F.R. § 1.116 on February 9, 2009. An Advisory Action was issued on February 25, 2009. However, the above arguments are maintained after full consideration of the statements contained in the Advisory Action.

9. For at least each of the foregoing reasons, Applicants respectfully submit that the pending claims are not obvious in view of Combs and Cook. In particular, the combination of Combs and Cook does not teach or suggest Applicant's invention of at least independent claims 1, 8, 16 and 18. In addition, claims 3, 4, 6-7, 9, 11, 13-15, 17 and 19-20 depend either directly or indirectly from independent claims 1, 8, 16 and 18 respectively, and recite additional limitations. Accordingly, claims 3, 4, 6-7, 9, 11, 13-15, 17 and 19-20 are also patentable under 35 U.S.C. 103(a) over Combs in view of Cook. Therefore, the rejection should be withdrawn.

CONCLUSION

Thus, Appellants submit that all of the claims presently in the application are allowable.

For the reasons advanced above, Appellants respectfully urge that the rejection of claims 1, 3, 4, 6-9, 11 and 13-20 is improper. Reversal of the rejection of the Final Office Action is respectfully requested.

Respectfully submitted,

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CLAIMS APPENDIX

1. (Previously presented) In an optical access network, a method for the communication of services between a central office and customer premises, comprising:

transmitting services from said central office to said customer premises through a passive all-optical downstream path having a first termination at said central office and a second termination at said customer premises; and

receiving services from said customer premises at said central office from an active optical upstream path having a first termination at said customer premises and a second termination at said central office.

2. (Canceled)

3. (Previously presented) The method of claim 1, wherein said passive all-optical downstream path comprises a means for splitting optical signals.

4. (Original) The method of claim 3, wherein said means for splitting optical signals comprises an optical power splitter.

5. (Canceled)

6. (Previously presented) The method of claim 1, wherein said active optical upstream path comprises:

at least one receiver for receiving services from said customer premises intended for upstream transmission; and

at least one switch for aggregating and multiplexing upstream traffic.

7. (Previously presented) The method of claim 6, wherein said active optical upstream path further comprises:

at least one transmitter for transmitting aggregated services upstream.

8. (Previously presented) An apparatus for the communication of services between a central office and customer premises in an optical access network, comprising:

a splitter disposed in a passive all-optical downstream path, for splitting downstream services transmitted from said central office through said passive all-optical downstream path;

at least one receiver disposed in an active optical upstream path, for receiving services from said customer premises from said active optical upstream path; and

at least one switch disposed in said active optical upstream path for aggregating and multiplexing upstream traffic;

wherein said passive all-optical downstream path has a first termination at said central office and a second termination at said customer premises;

wherein said active optical upstream path has a first termination at said customer premises and a second termination at said central office.

9. (Previously presented) The apparatus of claim 8, further comprising:

at least one transmitter for transmitting aggregated services upstream.

10. (Canceled)

11. (Previously presented) The apparatus of claim 8, wherein said passive all-optical downstream path further comprises a repeater.

12. (Canceled)

13. (Previously presented) The apparatus of claim 8, wherein said active optical upstream path further comprises a transmitter.

14. (Original) The apparatus of claim 8, wherein said splitter comprises a power splitter.

15. (Original) The apparatus of claim 8, wherein said apparatus is located within a central office of an access network configured for point-to-point communication.

16. (Previously presented) An apparatus for the communication of services between a central office and customer premises in an optical access network, comprising:

a means for splitting downstream services transmitted from said central office through a passive all-optical downstream path;

at least one means for receiving services from said customer premises from an active optical upstream path; and

at least one means for aggregating and multiplexing upstream traffic in said active optical upstream path;

wherein said passive all-optical downstream path has a first termination at said central office and a second termination at said customer premises;

wherein said active optical upstream path has a first termination at said customer premises and a second termination at said central office.

17. (Previously presented) The apparatus of claim 16, further comprising:

at least one means for transmitting aggregated services upstream.

18. (Previously presented) A passive/active optical access network for the communication of services between a central office and customer premises, comprising:

a central office;

at least one customer premise; and

an active/passive access unit for providing communication between said central office and said at least one customer premise, wherein said passive/active access network is adapted to:

transmit services from said central office to said customer premises through a passive all-optical downstream path, wherein said passive all-optical downstream path has a first termination at said central office and a second termination at said customer premises; and

receive services from said customer premises at said central office from said active optical upstream path, wherein said active optical upstream path has a first termination at said customer premises and a second termination at said central office.

19. (Previously presented) The passive/active optical access network of claim 18, wherein said passive all-optical downstream path of said active/passive access unit comprises a means for splitting services from said central office.

20. (Previously presented) The passive/active optical access network of claim 18, wherein said active optical upstream link of said active/passive access unit comprises:

at least one means for receiving services from said at least one customer premise;

at least one means for aggregating and multiplexing upstream traffic; and

at least one means for transmitting aggregated services upstream to said central office.

EVIDENCE APPENDIX

None

RELATED PROCEEDINGS APPENDIX

None